DOCUMENT RESUME

ED 267 551 EC 182 071

AUTHOR Birath, Gunnar
TITLE Advice and Hints in Training the Mentally Handicapped to Drive Electric Wheelchairs.
INSTITUTION Swedish Inst. for the Handicapped, Bromma.
PUB DATE Oct 85
NOTE 50p.
PUB TYPE Guides - Non-Classroom Use (055)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Foreign Countries; *Mild Mental Retardation; *Multiple Disabilities; Physical Disabilities; *Physical Mobility; *Wheelchairs

ABSTRACT

The booklet is intended to help train people with mild mental retardation to drive electric wheelchairs. The systematic training incorporates features of adequate time, stress upon generalization, and a relaxed and secure environment. Lessons are presented on the following skill areas: preparation, starting and stopping, driving straight ahead, turning, turning around, negotiating obstacles, marking tracks, reversing, giving way, critical situations, driving surfaces, speeds, driving over obstacles, choosing the route, slopes, being observant, public roads, games, wheelchair maintenance, and breakdowns. (CL)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.

Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

ED267551

Advice and hints in training the mentally handicapped to drive electric wheelchairs

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Jane Brodin

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

EC182071

Handikappinstitutet
Box 303 161 26 Bromma
Tel 08-87 91 40
Text tel 08-87 16 33

Order code 5225

October 1985

ADVICE AND HINTS IN TRAINING THE MENTALLY HANDICAPPED TO DRIVE ELECTRIC WHEELCHAIRS

G u n n a r B i r a t h

Handikappinstitutet
Box 303
S-161 26 Bromma
Tel: 46 (8) 87 91 40

Rikscentralen för pedagogiska hjälpmedel för rörelsehindrade
Bräcke Östergård
S-417 22 Göteborg
Tel: 46 (31) 50 25 00

Illustrations: Mocia Brolin and Cinna Gross (page 10)
Layout: Ulla Ernström
Translation: Struan Robertson

Contents

Page

To the teacher 3
To the wheelchair user 9
Preparation 10
Starting and stopping 12
Driving straight ahead 14
Turning 16
Turning around 18
Negotiating obstacles 20
Marking tracks 22
Reversing 24
Giving way 26
Critical situations 28
Driving surfaces 30
Speeds 32
Driving over obstacles 34
Choosing the route 36
Slopes 38
Being observant 40
Public roads 42
Games 44
Wheelchair maintenance 46
If the wheelchair breaks down 47

TO THE INSTRUCTOR

This material evolved while teaching mentally handicapped people to drive electric wheelchairs. It is intended as an aid in **training people with slight mental handicaps to use a wheelchair.**

Some phases of the training can be carried out indoors, but **most of the exercises take place outdoors.**

The wheelchair users that this material is intended for are expected to be able to learn to drive a wheelchair under supervision. However, they are not expected to use wheelchairs **in traffic**, and therefore this material contains no such exercises.

Learning to drive an electric wheelchair may be compared with learning to drive a car. You must learn to handle the controls while constantly being alert to what is going on around you, the surface you are driving on, street kerbs, obstacles that appear, etc.

This material is intended to help make this training systematic. It serves as a reminder of important operations, and has space for notes on the progress of training. After the first basic steps, the exercises can be taken in any order.

It is important to keep a record of the exercises that have been completed and how successful the student was, in particular if several people are being trained at once. The instructor can sign the squares for each exercise or note the date. Space has been left for notes, questions and comments.

GOOD LUCK!

..... Tel .....
Instructor

..... Tel .....
Instructor

..... Tel .....
Instructor

THE ELECTRIC WHEELCHAIR
- MENTAL HANDICAPS

Electrically driven wheelchairs have not previously been prescribed in great numbers to mentally handicapped people largely because of the risks; fear that they might run into people and objects and injure themselves and others. These risks have been more or less eliminated by modern technology in the form of collision protection, which causes the wheelchair to stop automatically when someone/something is in the way. Mentally handicapped people also have difficulties in steering wheelchairs. Having driven straight into a wall, they have got stuck because they did not know how to extricate themselves from that situation. These problems occur partly because they have to learn too much at once:

- starting - stopping
- manoeuvring
- reversing
- staying alert

Repeated failure has given many mentally handicapped people poor self confidence. For that reason it is important that each stage of these exercises is "presented" in a way that gives the students the best chance of **succeeding.**

THE TRAINING

Although mentally handicapped people use wheelchairs in a very similar way to other handicapped people, it is important to observe the differences. These differences must play a major part in the way they practice the handling and use of their wheelchairs.

The most important difference is probably the **time factor.** Mentally handicapped people need more time to learn, and this places demands on the instructor. To have the patience to wait. Not to rush things. To notice progress, however slow.

The process of learning must also be divided into very **small**, clearly defined, **steps**.

Because a mental handicap means it is **difficult to generalise**, special attention should be given to an analysis of the wheelchair user's environment. Training to drive through **one** doorway is not enough. It may be necessary to train the wheelchair user to negotiate **every** doorway in his/her surroundings. No two doorways are exactly the same. A good point of departure may be to see **every situation as new** and to be learnt afresh.

The pupils will have a better chance of success if the exercises are carried out in a relaxed atmosphere. Decisive factors are, for example, that the pupils **feel at home**, that they feel **secure** with their instructors, the recurrent routines etc.

THE WHEELCHAIR AS AN AID TO DEVELOPMENT

Manoeuvring a wheelchair requires a well-developed and co-ordinated motory system, conception of direction, and the ability to understand cause and effect relationships. At the same time, these are the functions that could not be trained, because the handicap reduced mobility, resulting in a lack of practical experience.

When we give a mentally handicapped person a mobility aid, we give him/her the possibility of acquiring this experience, and the opportunity to train, for example, the conception of direction and coordination of movements.

By giving them the opportunity to move about unaided, we help them acquire a better conception of space, increase their social contacts, more opportunities to discover cause and effect relationships, etc. This strengthens the motivation to take individual initiatives, it raises the level of activity and gives them the opportunity to extend the limits of their experience and enrich their lives.

THE RESPONSIBILITY OF PRESCRIBING AN ELECTRIC WHEELCHAIR FOR A MENTALLY HANDICAPPED PERSON

In order to put the medical health system's regulations on responsibility into perspective, it is worth pointing out that all adults are responsible for themselves and their actions, that parents and custodians are responsible for children under the age of 18, and that guardians and minders bear some responsibility for adults who are legally incompetent.

When an electric wheelchair is prescribed for a mentally handicapped person, it is important to bear this in mind, so that the parents, any other custodian, care staff and/or guardians are included in the testing and training procedures, and are kept well-informed.

Responsibility during the prescription/training process

The prescribing doctor and the staff who test the wheelchair and train the mentally handicapped person are responsible for ensuring that he/she is not injured or runs the risk of injury during the prescription/training process.

If an accident or serious incident occurs during the training period, the staff are liable to immediately inform the prescribing doctor, who must in turn pass this information on to the head of the clinic or a person with similar responsibility. If the accident or incident may be considered to have been caused by incorrect action by any of the staff, neglect of any factor that affected the event, or if there is any suspicion of a fault in the wheelchair, the head of the medical care institute has an absolute obligation to report the accident or incident to the Social Welfare Board.

Responsibility after completing the prescription and training process

Giving a mentally handicapped, physically disabled person an electric wheelchair means an important improvement in the quality of his/her life. This must be set against any risk that may be incurred by the resulting increase in mobility. The staff that make this assessment should not forget

that everybody who lives a normal life is constantly exposed to various kinds of risks, and even mentally handicapped people must learn to deal with these risks.

The prescriber/tester is not responsible for any accidents, damage, injury and incidents etc. that may occur after the introduction and testing phase is completed, provided the prescription is medically unimpeachable, the training has been properly carried out, and the mentally handicapped person is assessed as being able to handle the wheelchair in the situations in which it is to be used.

Financial responsibility

If an accident should occur while the handicapped person is being trained to use the wheelchair, and a court should judge any of the staff to be responsible for the accident, the employer, and not the individual staff member, is liable to pay any damages.

Normal insurance regulations apply if the mentally handicapped person should cause damage or injury while using the wheelchair. In this context, it should be mentioned that the Folksam insurance company has a special third party policy for electric wheelchairs that can be taken out if more insurance coverage is required than that provided by household insurance policies.

You can read more about the question of responsibility in the Swedish Institute for the Handicapped's promemoria on the prescription of handicap aids, order no. 4208.

TO THE WHEELCHAIR DRIVER

You now have an electric wheelchair.

CONGRATULATIONS!

To avoid damage to your wheelchair it is important that you learn to drive it properly.

It is also important that you become a skilled wheelchair driver so that you don't run into other people.

This is your book.
Your name should be written here.

THIS BOOK BELONGS TO:

_____

Paste
your
photograph
here

PREPARATION

Before you make your first attempts to drive the wheelchair, a thorough test must be made of the seat adjustment and suitable controls and manoeuvring equipment must be thoroughly tested.

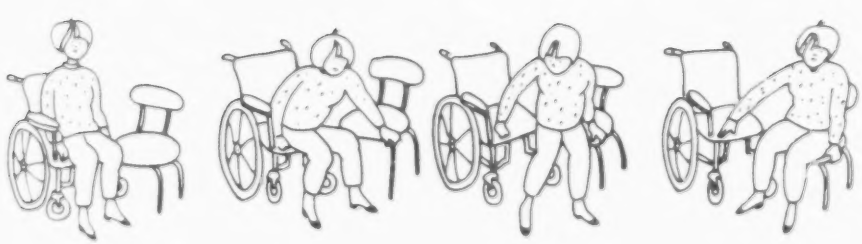
Sitting in the wheelchair

Many people can manage to sit down on and get up from a wheelchair on their own. Other people should be given as much help as possible. Examine the possibilities of using a sliding board and similar aids. Getting into the wheelchair sideways with the chair at an angle to what you were sitting on has proved to be a good technique.

Sitting properly in the chair

It is important that the driver (in future we will use the letter D to signify the driver) learns to check whether he/she is sitting properly in the wheelchair, at the right height in the chair and with proper arm support, but also that he/she is able to change position from time to time. Do not forget in future to ask D occasionally:

- if he/she hurts anywhere
- if he/she feels comfortable
- if he/she feels tired.



	Tested	Can manage with assistance	Can manage without assistance
Getting into the wheelchair			
Sitting properly in the chair			

Comments _____

_____

_____

11

STARTING - STOPPING

The first attempt

It is important that the first attempt is a positive experience. A large open area is recommended to begin with, to avoid any risk of collision in the early stages. At the same time, the risk of failure is reduced.

Starting - stopping

Check that the speed control is at the lowest setting. Otherwise D may be frightened by an unexpected jerk, and it may then be a lengthy process to persuade D to get back into the wheelchair.

Switching on

D must learn to do as much as possible unaided. However, in many cases it may be wise to postpone learning this operation, so that D has to concentrate on the smallest possible number of actions in the beginning.

Moving the lever forward - releasing the lever

Take D's hand and help D find the lever. Help to move the lever forward and back to the zero position. Do this several times and gradually let D take over.

	Tested	Can manage with assistance	Can manage without assistance
Turn on the wheelchair's power			
Move the lever forwards			
Release the lever			
Turn the wheelchair off			

Comments _____

_____

_____

DRIVING STRAIGHT AHEAD

Try to start on a flat, open area where no "mistakes" can occur. Stand a short distance away from the wheelchair and ask D to come to you.

Be prepared to back away if D can't stop.

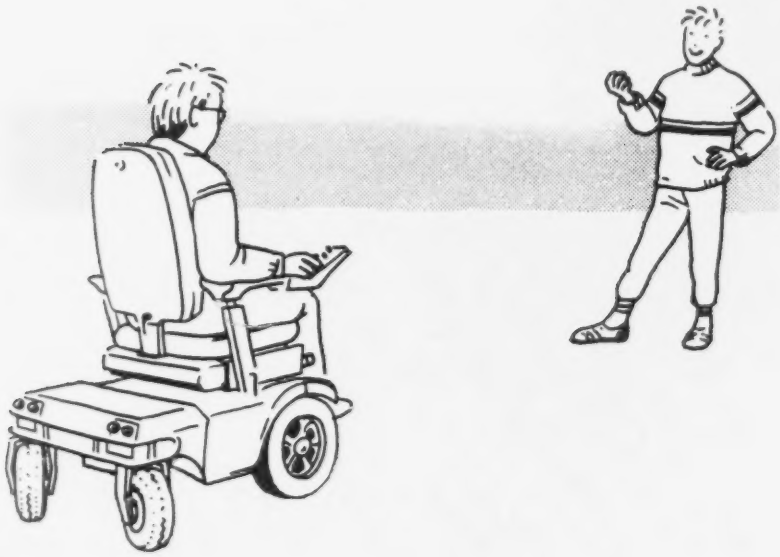
Gradually increase the distance, remembering that D may drive more erratically as you get farther away. Drivers that have no initial conception of "straight ahead" may need to be helped at first by colour markings or suchlike to indicate which direction to move the lever to make the wheelchair move straight ahead. In other cases, one may need to devise a plate to mount around the lever to restrict the turning manoeuvre.

	Tested	Can manage with assistance	Can manage without assistance
2 metres			
2 - 5 metres			
As far as possible			

Comments _____

_____

_____



TURNING

Stand in front of the wheelchair slightly to one side and ask D to come to you. Gradually increase the distance and the angle.

Many people find it particularly difficult to "control" the turn. Controlling a turn requires more practice and insight than moving off in a certain direction from a stationary position. One way of training this manoeuvre is to let D drive around freely in an open area and, at his/her own pace, discover what happens when the lever is moved in different directions.

	Tested	Can manage with assistance	Can manage without assistance
At an angle to the left (10–20°)			
At an angle to the right (10–20°)			
Sharper left turn (40–70°)			
Sharper right turn (40–70°)			
Hard left (90°)			
Hard right (90°)			

Comments _____

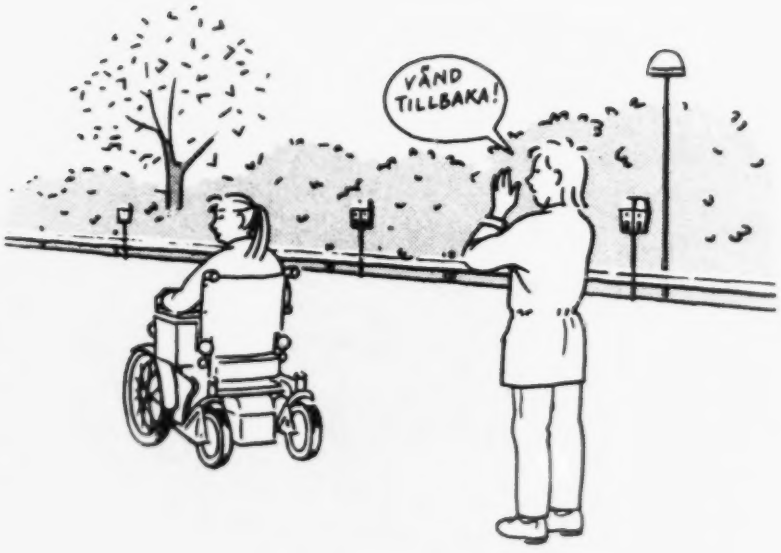
_____

_____

TURNING AROUND

D may not understand the meaning of the concept of "turning around". To start with, it may be easier if the instructor says "turn around and come back".

In general, it is important to be alert to the way D understands instructions, and wheelchair training should also be used as a suitable opportunity to train the understanding of verbal instructions.

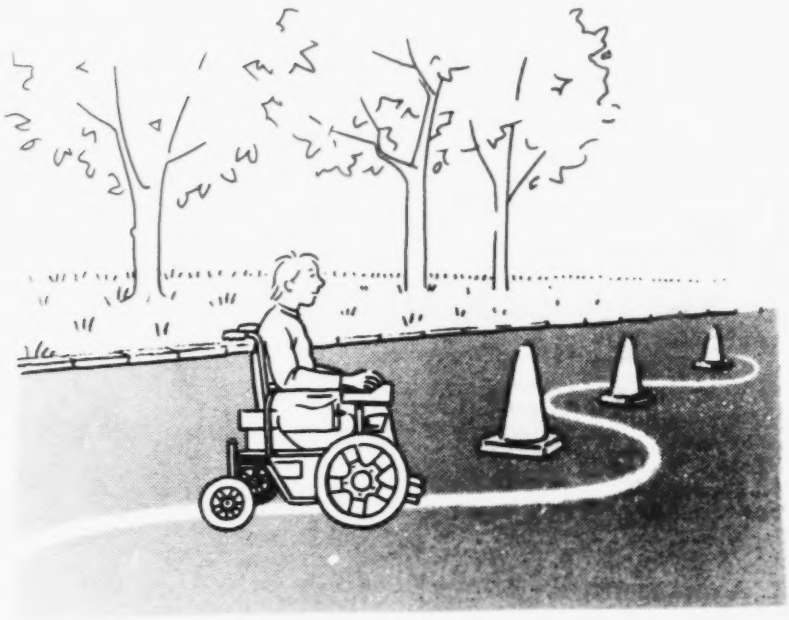


	Tested	Can manage with assistance	Can manage without assistance
"Rounding" a cone or similar object			
Driving a short distance, and return			
Turning round on a narrow road			

Comments _____

_____

_____



NEGOTIATING OBSTACLES

Plastic traffic cones are suitable obstacles. The Police will usually supply these on short-term loan. Schools often have this type of cone in their sports equipment.

The slalom track

It may be difficult to understand how a "slalom track" works. You may have to mark out the passage through the slalom with plastic tape or some similar form of marking (see MARKING page 22).

	Tested	Can manage with assistance	Can manage without assistance
Stand 6-8 metres in front of the wheelchair. Place 1 obstacle between you and the wheelchair			
Place an obstacle 3 metres in front of the wheelchair			
Place an obstacle closer and closer to the wheelchair			
Place several obstacles in front of the wheelchair			
Set up a "slalom track"			

Comments _____

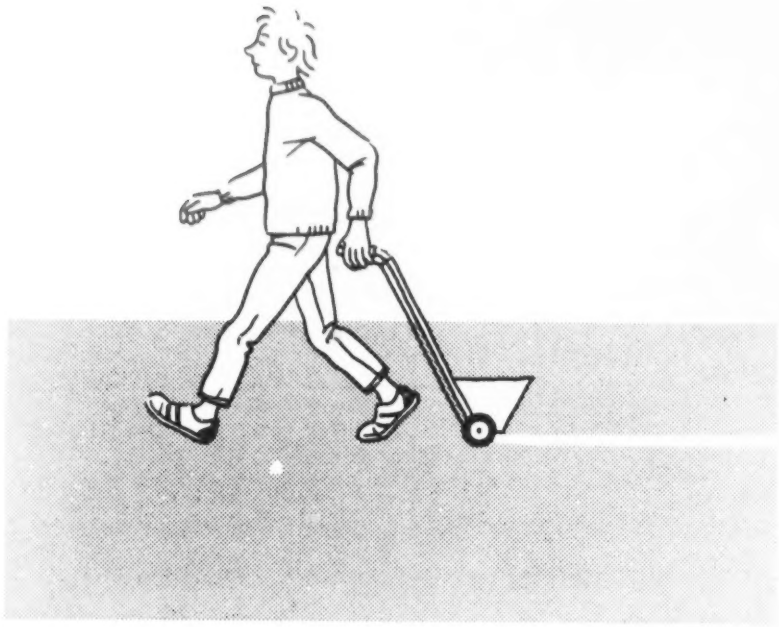
_____

_____

MARKING TRACKS

The method used for football pitches, etc. is recommended for marking lines: a small hopper on wheels, filled with chalk powder. The hopper is then rolled to make white line markings. This line can be washed away, or will in time disappear in the rain.

This equipment can be borrowed from the municipal recreational centres administration or from a sports club. Line marking can also be used to make, for example, the edge of a road more clearly visible.



	Tested	Can manage with assistance	Can manage without assistance
Follow a straight line			
Follow an S-curve			
Follow a circle clockwise			
Follow a circle anti-clockwise			
Follow an irregular line			

Comments _____

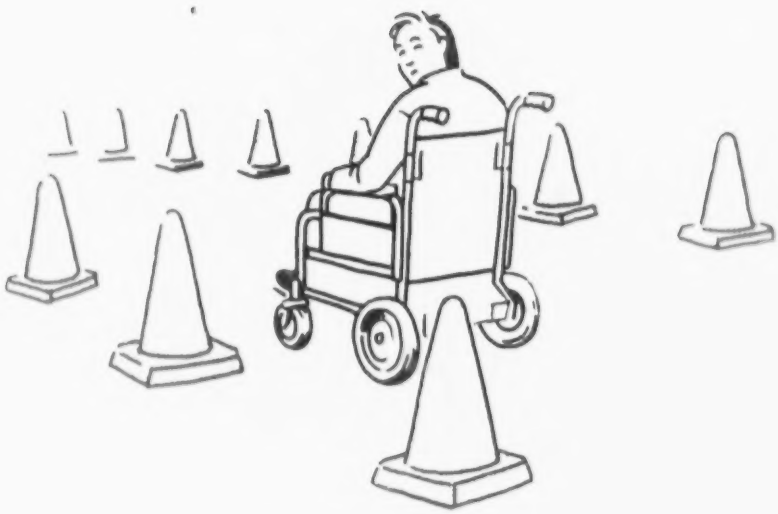
_____

_____

REVERSING

One of the most common stumbling blocks at the beginning of the training is that D gets stuck against an obstacle; a wall, a tree, etc. It is therefore an advantage to learn to reverse early in the training programme.

However, the combination of reversing and turning is very difficult at first, so it may be best to learn to reverse "straight back" at an early stage (possibly with the aid of a mark by the lever). In time, the reversing exercises can be made more complicated, for example by reversing into a narrow passage, etc.



	Tested	Can manage with assistance	Can manage without assistance
Training to move the lever back			
Place an obstacle just in front of the wheelchair. Reverse!			
Drive towards a wall. Reverse			
Train a combination of reversing and turning			
Drive into a narrow road. Turn!			

Comments _____

_____ _____

_____

GIVING WAY

As D's confidence grows during the basic exercises (starting - stopping, driving straight ahead, turning, turning around, following markings and reversing), the time comes to gradually leave the protected environment and begin to familiarize him/her with "critical situations". Here, the ability to know when you are "too close" must be trained. The user must not become paralysed by becoming "the victim of the situation", but in time feel him/herself to be the "master of the situation".

This is best achieved by repeatedly meeting different "critical situations", getting to know them and learning to master them.

Add to the list on the next page, or make your own list of critical places in the immediate surroundings in question. Return to these frequently.

	Tested	Can manage with assistance	Can manage without assistance
Driving close to an object			
Driving close to a person			
Driving close to a wall			
Driving close to a plastic tape at eye level			
Driving fast - stopping			
Stopping on request			
Driving close to an object going up a hill			
Driving close to an object going down a hill			

Comments _____

_____

_____

CRITICAL SITUATIONS

Narrow passages

Use cones or other obstacles to set up a narrowing passage. Begin with a good width, but gradually move the obstacle in as far as possible.

A person/object appearing suddenly

- let people cross the path of the wheelchair
- roll a large ball in front of the wheelchair

Getting stuck

This involves getting stuck on a surface such as sand, snow and asphalt. Depending on the situation, it may be good to know:

- techniques for freeing the wheelchair
- learning to avoid that sort of surface
- signal for help

A faulty wheelchair

Is will help if D can take care of simple faults himself/herself, for example:

- the power switch has inadvertently been knocked into the off position
- the speed control has been inadvertently moved to zero.

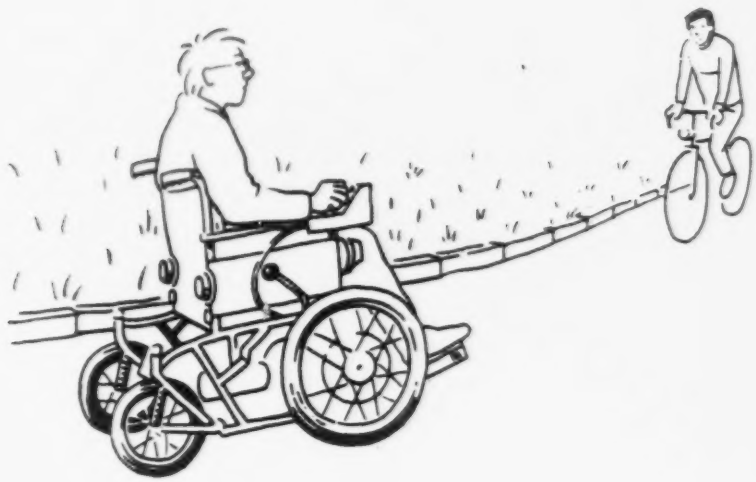
It is also an advantage if D can learn to read the control that indicates that the power reserve in the battery is low, if that instrument is visible on the control panel.

	Tested	Can manage with assistance	Can manage without assistance
Negotiating a narrow passage			
A person appearing suddenly			
An object (ball, cyclist, dog, etc.) that appears suddenly			
Getting stuck			
Wheelchair breakdown			

Comments _____

_____

_____



DRIVING SURFACES

This part of the training is particularly important for people who, due to their handicap, cannot crawl or fall and have therefore not had the opportunity to feel the characteristics of different surfaces. This list can be extended.

	Tested	Can manage with assistance	Can manage without assistance
Gravel road			
Loose gravel			
Sand			
Grass			
Tarmac			

Comments _____

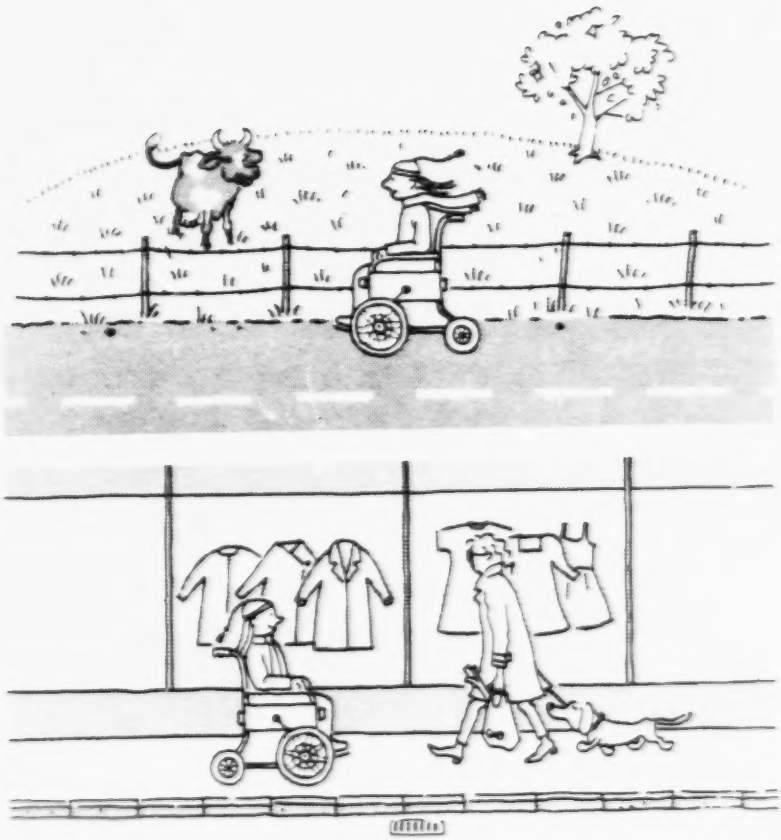
_____

_____

SPEEDS

At the beginning, only the instructor can select the speed. In time, D will learn to adjust the speed to suit different situations.

Please Note! As with the other exercises, this part of the training should be repeated several times. Previously completed exercises should be repeated often.



	Tested	Can manage with assistance	Can manage without assistance
Driving fast			
Driving slowly			
Choosing the right speed for prevailing conditions			

Comments _____

_____

_____

DRIVING OVER OBSTACLES

The majority of wheelchair drivers have very little or no experience of what can happen if they drive over a hole or a bump. A child without a handicap gains this experience by patiently repeated attempts and failures (crawling, tripping, driving a doll's pram or a playing with a toy truck, riding a tricycle, etc.).

This is mentioned to emphasise the importance of a great deal of practice.

When you think that the training of one operation has been completed, remember that your judgement may be affected by your own fatigue.

If you are tired of a particular exercise, leave it for a while and return to it later. This is also good for the wheelchair driver.

	Tested	Can manage with assistance	Can manage without assistance
Driver over a 2-3cm thick board Change the position of the board: lengthways, crossways, etc.			
Drive over different types and thicknesses of obstacle			
Drive over small holes (Warn D about deeper ones!)			
Drive through shallow puddles. (Warn D about deeper ones!)			

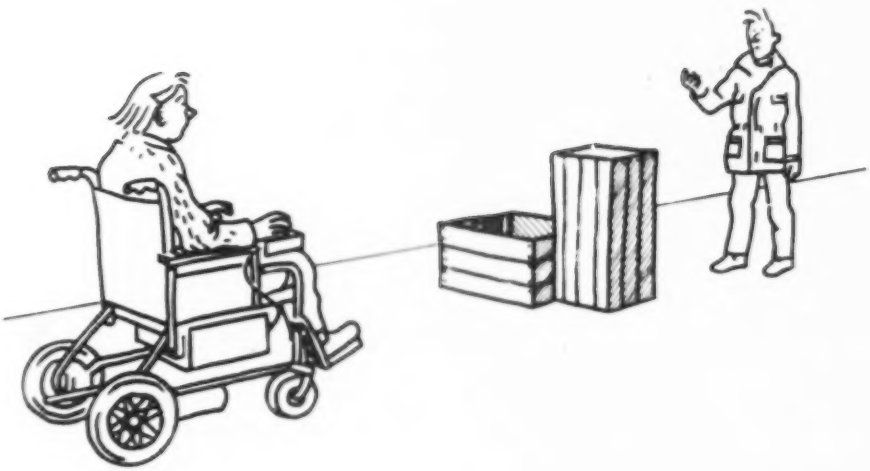
Comments _____

_____

_____

CHOOSING THE ROUTE

At first the instructor chooses suitable/accessible roads. In time, D should assume this responsibility to the extent that he/she can.



	Tested	Can manage with assistance	Can manage without assistance
Place several obstacles in the path of the wheelchair			
Arrange situations where a detour is necessary			
Give destinations that are further and further away and involve an increasingly complicated choice of route			

Comments _____

_____

_____

SLOPES

It is important to know **how far a wheelchair can lean over.** It is even more important to learn what angle is critical.

Unfortunately, some wheelchairs do not remain stationary on uphill or downhill slopes, even though the control is set to zero. This can be compensated by using the lever. When starting on an uphill or downhill slope, all wheelchairs roll a little before they can be driven. This should be practiced. A check should also be made of whether the controls can be modified. Remember that narrow wheelchairs can easily tip over sideways!

	Tested	Can manage with assistance	Can manage without assistance
Uphill slope			
Gentle slopes			
Steep slope			
Downhill slope			
Gentle slope			
Steep slope (Note! risk of overturning)			
Sideways slope			
Varying degrees of steepness (Note! risk of overturning)			
Turning on a slope			

Comments _____

_____

_____

BEING OBSERVANT

The object of these exercises is to get D used to looking well ahead, and to judging different degrees of difficulty.

Meeting a pedestrian, for example, does not require the same amount of caution as meeting a vehicle.

Train D to stop by the side of the road in "dangerous" encounters.

	Tested	Can manage with assistance	Can manage without assistance
Before starting, always check there is nothing in your way			
Arrange "encounters" with pedestrians etc.			
Arrange for D to be overtaken by a cyclist, another wheelchair, etc.			

Comments _____

_____

_____

PUBLIC HIGHWAYS

The step from driving in controlled and calm traffic environments to driving in denser traffic is a very large one. Careful consideration must be given to whether or not D is ready to take this step.

	Tested	Can manage with assistance	Can manage without assistance
Keep to the right side of the road			
Find pedestrian crossings			
Maximum visibility when crossing roads			
Driving on pavements			
Driving up onto the kerb			
Driving down off the kerb			

Comments _____

_____

_____

GAMES

If you are doubtful about "playing" with an electric wheelchair, consider the following:

Because of their handicaps, disabled people have always been barred from taking part in many activities, for example games involving motion.

The wheelchair is the disabled person's legs. It must be important for people who have been given "new legs" to use these even in play. At the same time, naturally, it must be made perfectly clear to D which games are suitable/unsuitable to take part in with the aid of a wheelchair.

Demolishing a tower

A tower can be made by placing a ball on top of a traffic cone. The cone must not be run over, only nudged to make the ball fall off. Useful precision training!

Kicking a large ball

Large beach balls are suitable, as are some of the balls used in physiotherapy.

Bursting balloons

In this game an object must be run over. This game should be avoided with people who are considered to be unable to recognize what may and may not be run over.

	Tested	Can manage with assistance	Can manage without assistance
Knocking over a tower			
"Kicking" a large ball			
Bursting balloons			
Obstacle course			

Comments _____

_____

_____

WHEELCHAIR MAINTENANCE

It is important to prolong the life of the wheelchair by looking after it properly.

Wheelchair driving instructors should make regular checks of the following:

CHARGING THE BATTERIES: Charge the wheelchair's batteries every time it has been driven. Check the acid level fortnightly. If the wheelchair has not been driven, charge the battery once a month.

TYRES: Are they inflated to the right pressure?

CLEANING: To clean, wipe with a damp cloth.

SCREWS AND NUTS: Tighten if loose.

BRAKES: Test regularly by driving the chair yourself.

See also the instructions in the brochure **Your Electric wheelchair**, published by the Swedish Institute for the Handicapped, order no. 1302, and **It is easy to charge a battery!**, order no. 3307.

IF THE WHEELCHAIR BREAKS DOWN

It is important that you as an instructor learn to repair simple faults. Discuss this with your nearest centre for disability aids.

Name .....

Tel. no. .....

The Swedish Institute for the Handicapped initiates the research and development of aids, tests and assesses aids and methods and initiates and conducts information and training programmes in these areas. The Swedish Institute for the Handicapped is financed by the state and the Association of Swedish County Councils.

The National Centre for Pedagogic Aids for Handicapped People has the task of promoting teaching aids for handicapped pupils in pre-school, primary school and the corresponding compulsory schools (schools for the mentally handicapped), in the upper secondary school and in adult education.

CM-TRYCK AB, Bromma 1985